OIPE JC35
FEB 01 2005
PATENT & TRADEMARK OFFICE

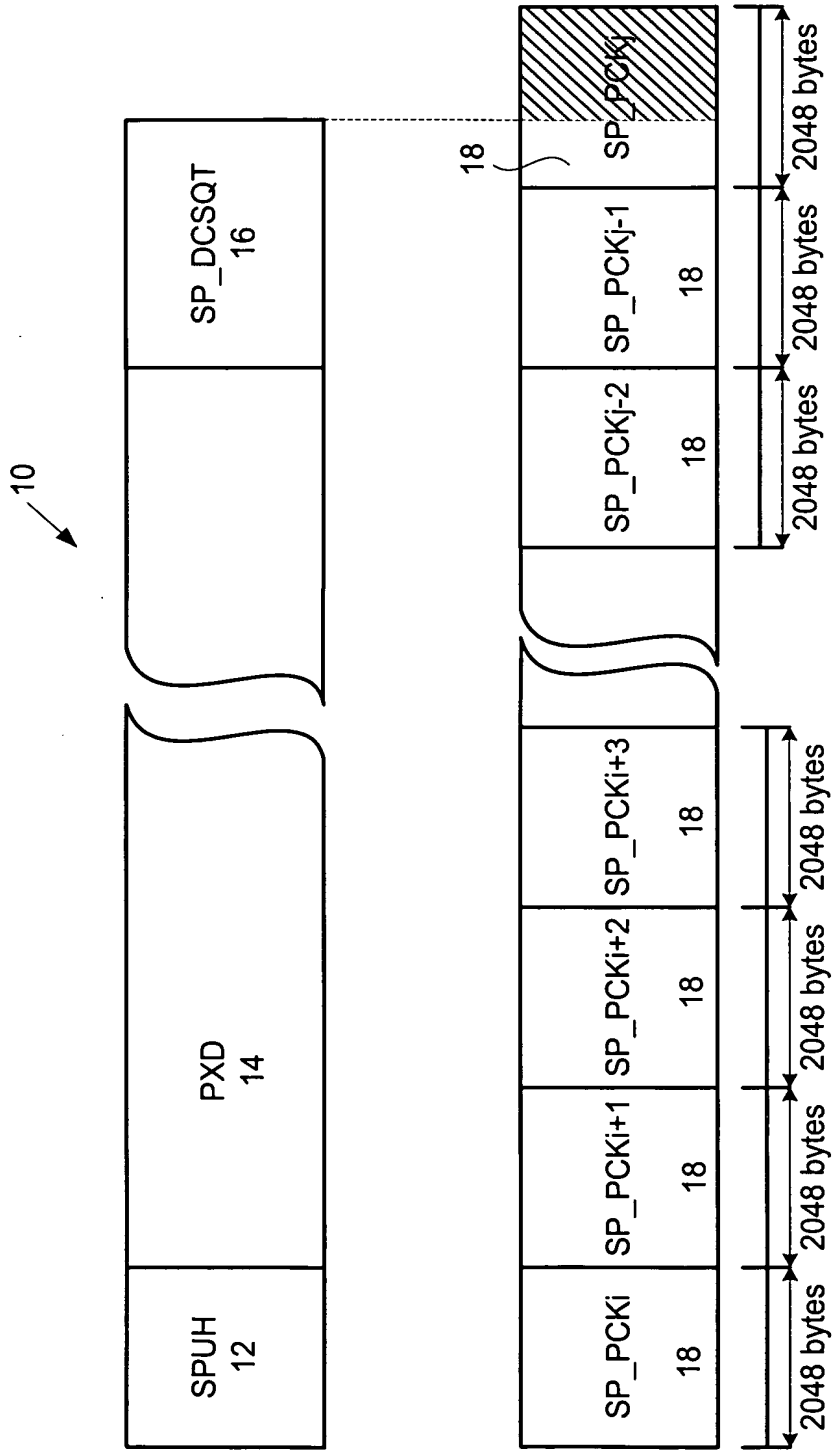

Fig. 1

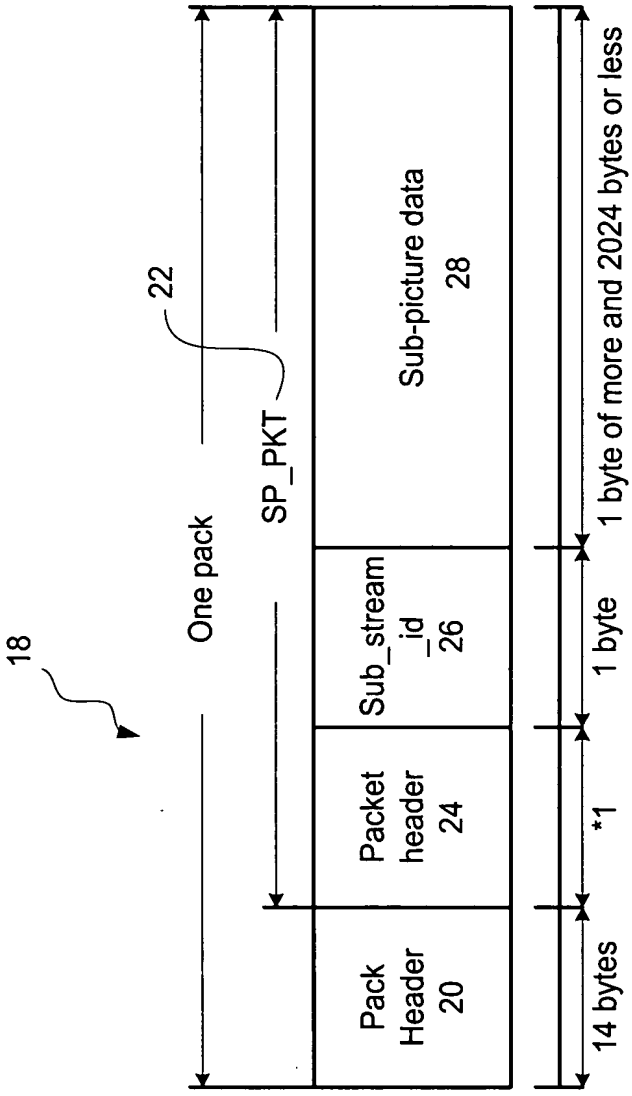
18
22
One pack
SP_PKT
Pack Header 20
Packet header 24
Sub_stream _id 26
Sub-picture data 28
14 bytes
*1
1 byte
1 byte of more and 2024 bytes or less

Fig. 2

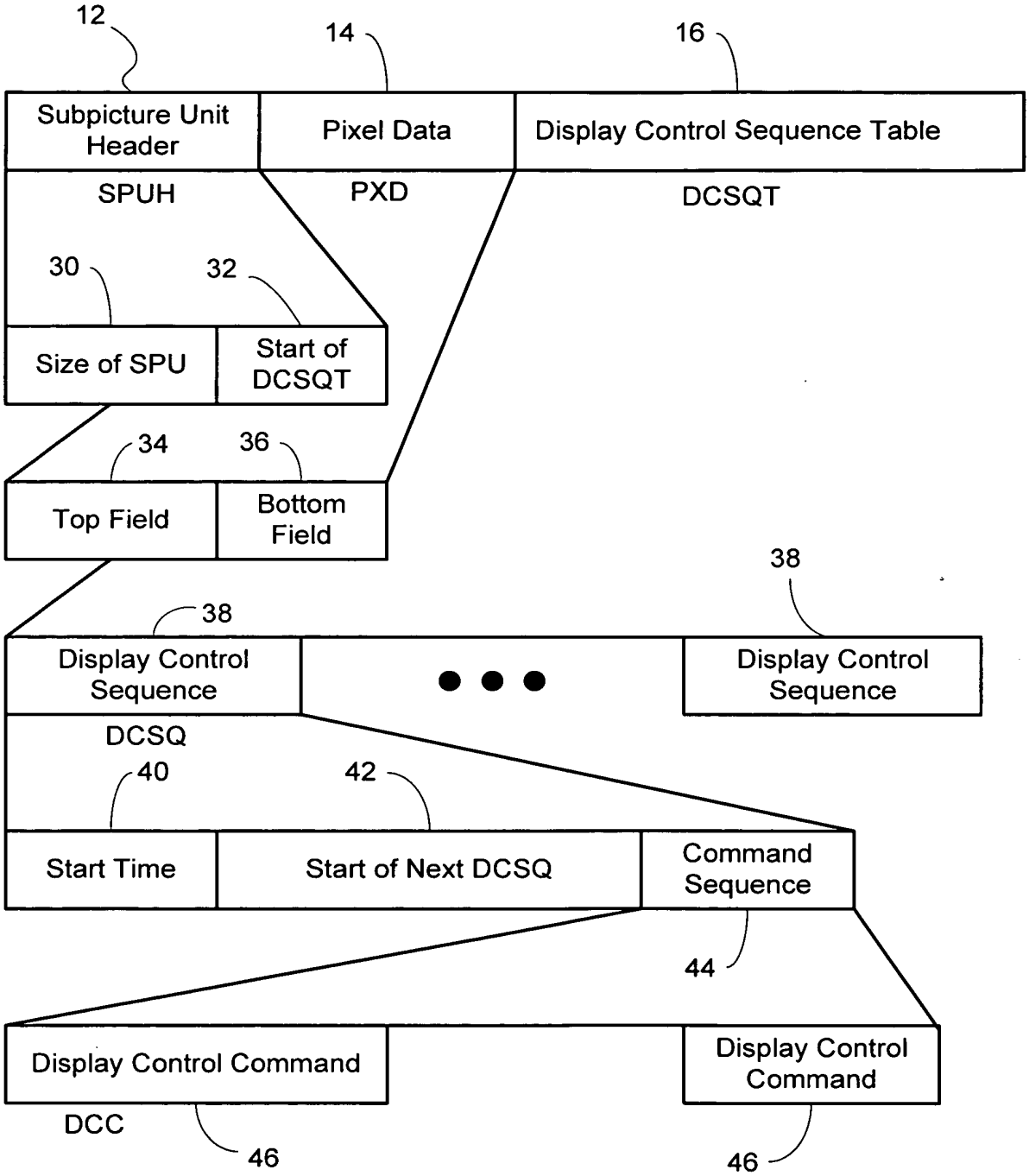
12
14
16
Subpicture Unit Header
Pixel Data
Display Control Sequence Table
SPUH
PXD
DCSQT
30
32
Size of SPU
Start of DCSQT
34
36
Top Field
Bottom Field
38
38
Display Control Sequence
Display Control Sequence
DCSQ
40
42
Start Time
Start of Next DCSQ
Command Sequence
44
Display Control Command
Display Control Command
DCC
46
46

Fig. 3

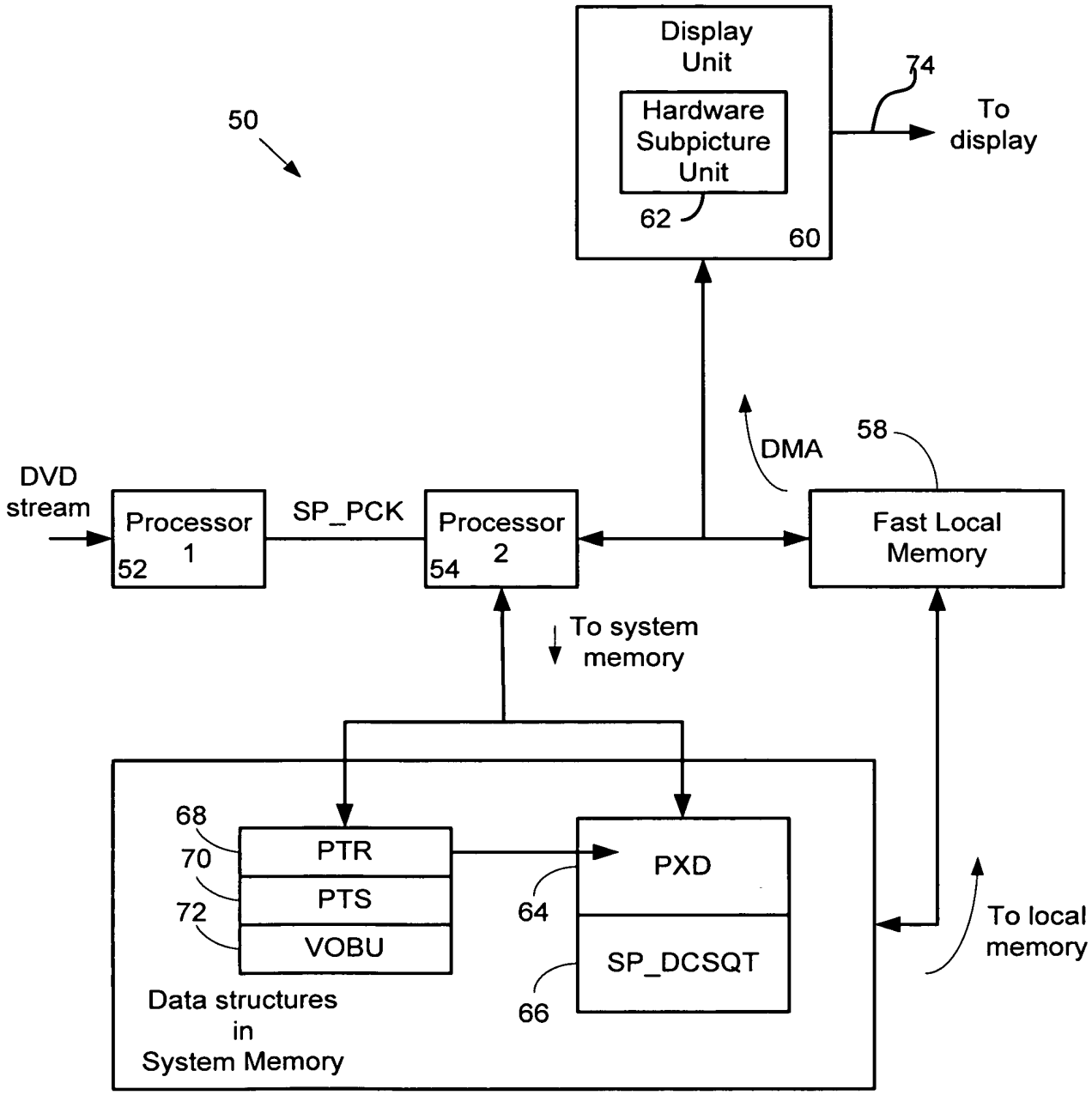
50
Display Unit
Hardware Subpicture Unit
62
60
74
To display
DMA
58
DVD stream
Processor 1
52
SP_PCK
Processor 2
54
Fast Local Memory
To system memory
68
70
72
PTR
PTS
VOBU
Data structures in System Memory
PXD
64
SP_DCSQT
66
To local memory

Fig. 4

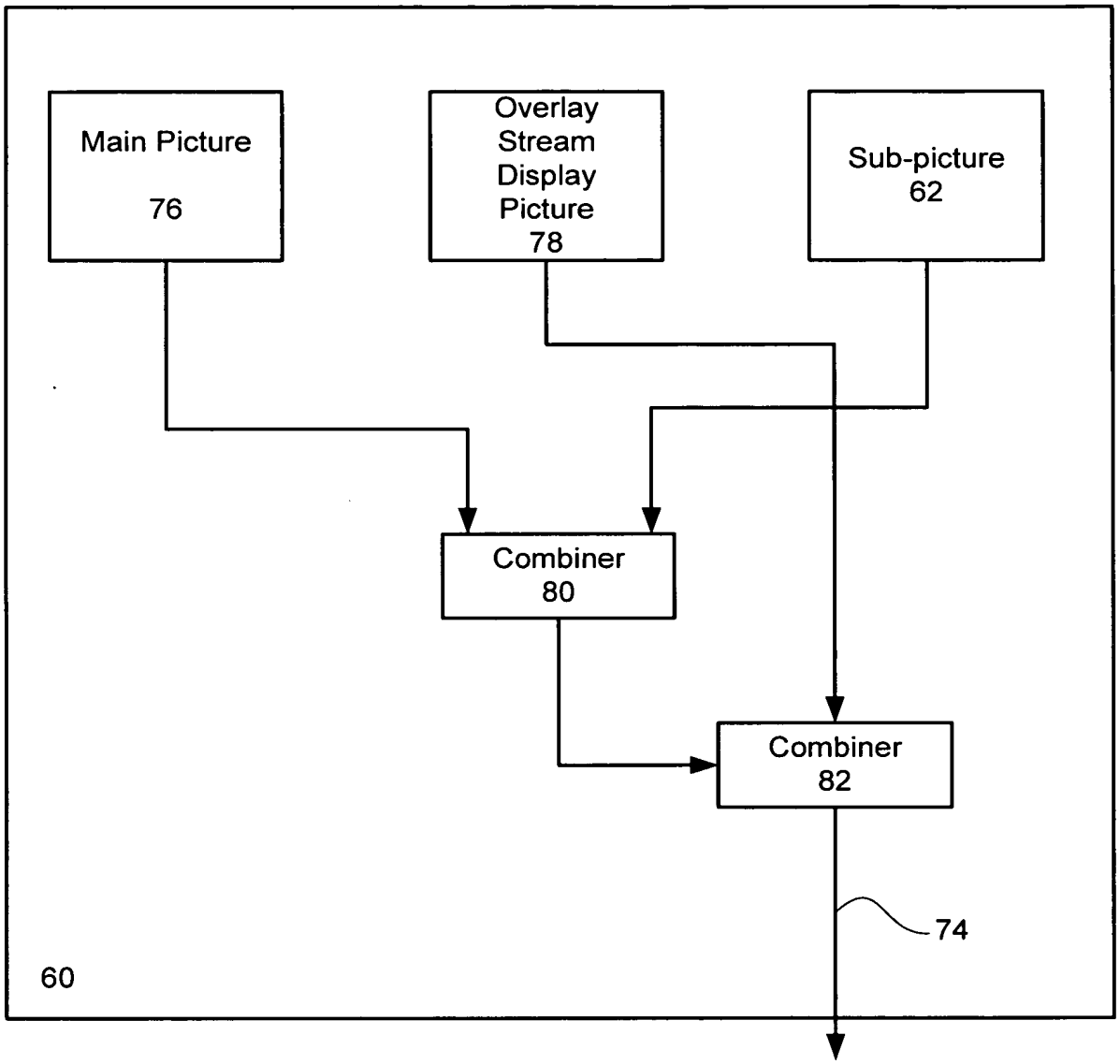
Main Picture
76
Overlay
Stream
Display
Picture
78
Sub-picture
62
Combiner
80
Combiner
82
74
60

Fig. 5

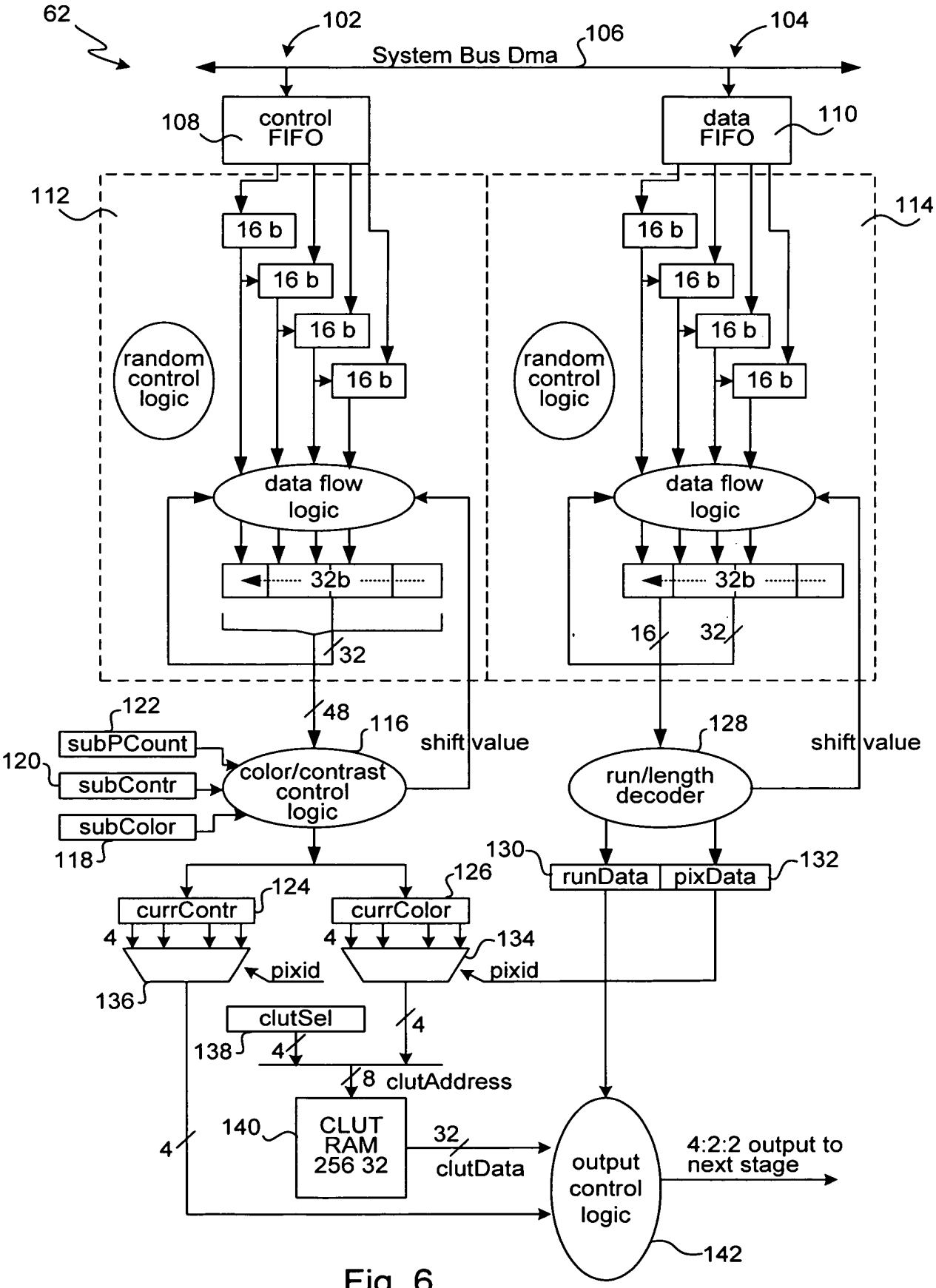
62
102
104
System Bus Dma
106
108
control FIFO
data FIFO
110
112
114
16 b
16 b
16 b
16 b
random control logic
data flow logic
32b
32
48
16
32
122
subPCount
120
subContr
subColor
118
116
shift value
color/contrast control logic
128
shift value
run/length decoder
130
runData
pixData
132
124
currContr
126
currColor
4
4
134
pixid
pixid
136
clutSel
138
4
4
8 clutAddress
140
CLUT RAM 256 32
32
clutData
4
output control logic
4:2:2 output to next stage
142

Fig. 6

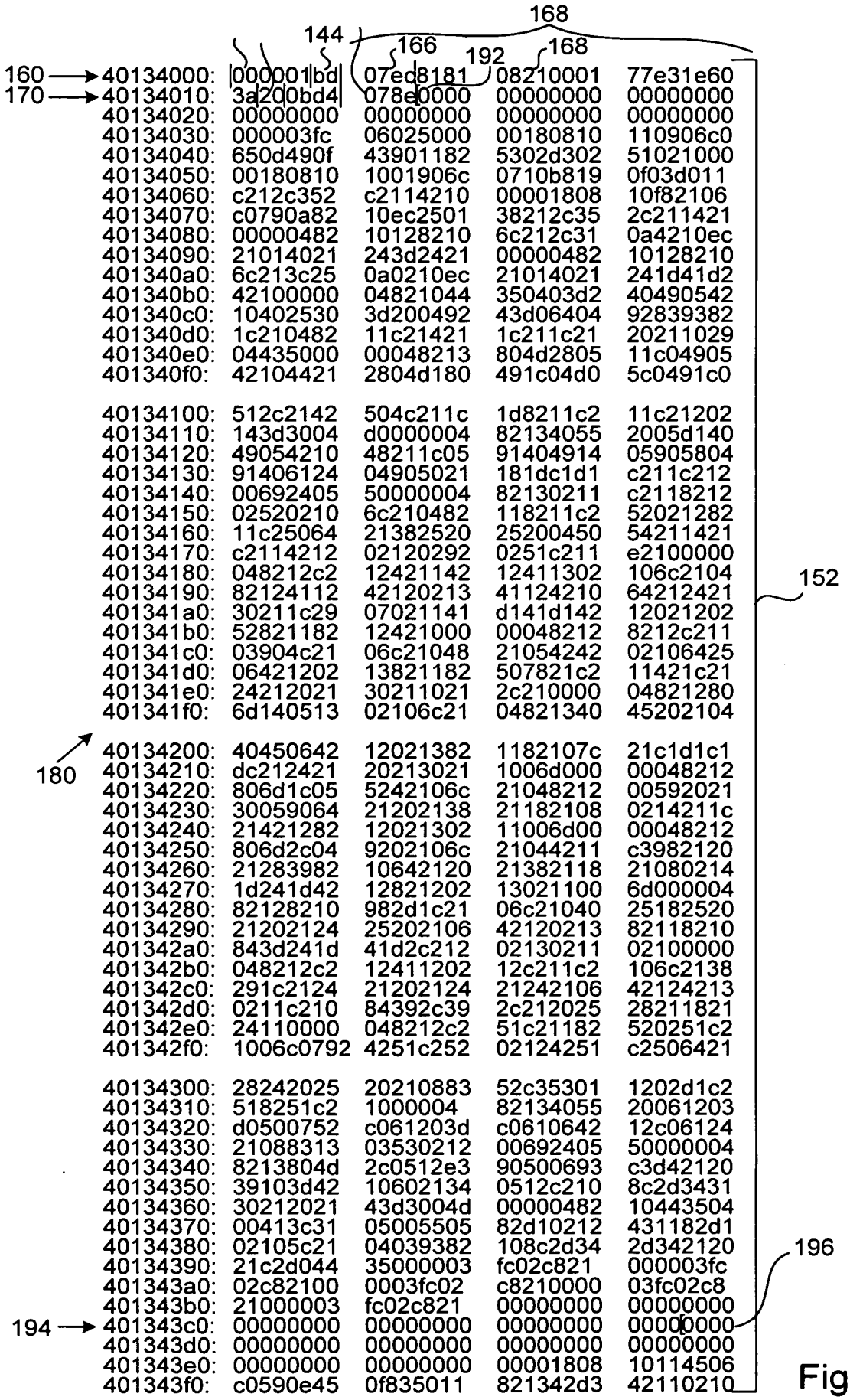
168
144
166
192
168
160
170
180
194
152
196
40134000: 000001bd 07ed8181 08210001 77e31e60
40134010: 3a200bd4 078e0000 00000000 00000000
40134020: 00000000 00000000 00000000 00000000
40134030: 000003fc 06025000 00180810 110906c0
40134040: 650d490f 43901182 5302d302 51021000
40134050: 00180810 1001906c 0710b819 0f03d011
40134060: c212c352 c2114210 00001808 10f82106
40134070: c0790a82 10ec2501 38212c35 2c211421
40134080: 00000482 10128210 6c212c31 0a4210ec
40134090: 21014021 243d2421 00000482 10128210
401340a0: 6c213c25 0a0210ec 21014021 241d41d2
401340b0: 42100000 04821044 350403d2 40490542
401340c0: 10402530 3d200492 43d06404 92839382
401340d0: 1c210482 11c21421 1c211c21 20211029
401340e0: 04435000 00048213 804d2805 11c04905
401340f0: 42104421 2804d180 491c04d0 5c0491c0
40134100: 512c2142 504c211c 1d8211c2 11c21202
40134110: 143d3004 d0000004 82134055 2005d140
40134120: 49054210 48211c05 91404914 05905804
40134130: 91406124 04905021 181dc1d1 c211c212
40134140: 00692405 50000004 82130211 c2118212
40134150: 02520210 6c210482 118211c2 52021282
40134160: 11c25064 21382520 25200450 54211421
40134170: c2114212 02120292 0251c211 e2100000
40134180: 048212c2 12421142 12411302 106c2104
40134190: 82124112 42120213 41124210 64212421
401341a0: 30211c29 07021141 d141d142 12021202
401341b0: 52821182 12421000 00048212 8212c211
401341c0: 03904c21 06c21048 21054242 02106425
401341d0: 06421202 13821182 507821c2 11421c21
401341e0: 24212021 30211021 2c210000 04821280
401341f0: 6d140513 02106c21 04821340 45202104
40134200: 40450642 12021382 1182107c 21c1d1c1
40134210: dc212421 20213021 1006d000 00048212
40134220: 806d1c05 5242106c 21048212 00592021
40134230: 30059064 21202138 21182108 0214211c
40134240: 21421282 12021302 11006d00 00048212
40134250: 806d2c04 9202106c 21044211 c3982120
40134260: 21283982 10642120 21382118 21080214
40134270: 1d241d42 12821202 13021100 6d000004
40134280: 82128210 982d1c21 06c21040 25182520
40134290: 21202124 25202106 42120213 82118210
401342a0: 843d241d 41d2c212 02130211 02100000
401342b0: 048212c2 12411202 12c211c2 106c2138
401342c0: 291c2124 21202124 21242106 42124213
401342d0: 0211c210 84392c39 2c212025 28211821
401342e0: 24110000 048212c2 51c21182 520251c2
401342f0: 1006c0792 4251c252 02124251 c2506421
40134300: 28242025 20210883 52c35301 1202d1c2
40134310: 518251c2 1000004 82134055 20061203
40134320: d0500752 c061203d c0610642 12c06124
40134330: 21088313 03530212 00692405 50000004
40134340: 8213804d 2c0512e3 90500693 c3d42120
40134350: 39103d42 10602134 0512c210 8c2d3431
40134360: 30212021 43d3004d 00000482 10443504
40134370: 00413c31 05005505 82d10212 431182d1
40134380: 02105c21 04039382 108c2d34 2d342120
40134390: 21c2d044 35000003 fc02c821 000003fc
401343a0: 02c82100 0003fc02 c8210000 03fc02c8
401343b0: 21000003 fc02c821 00000000 00000000
401343c0: 00000000 00000000 00000000 00000000
401343d0: 00000000 00000000 00000000 00000000
401343e0: 00000000 00000000 00001808 10114506
401343f0: c0590e45 0f835011 821342d3 42110210

Fig. 7A

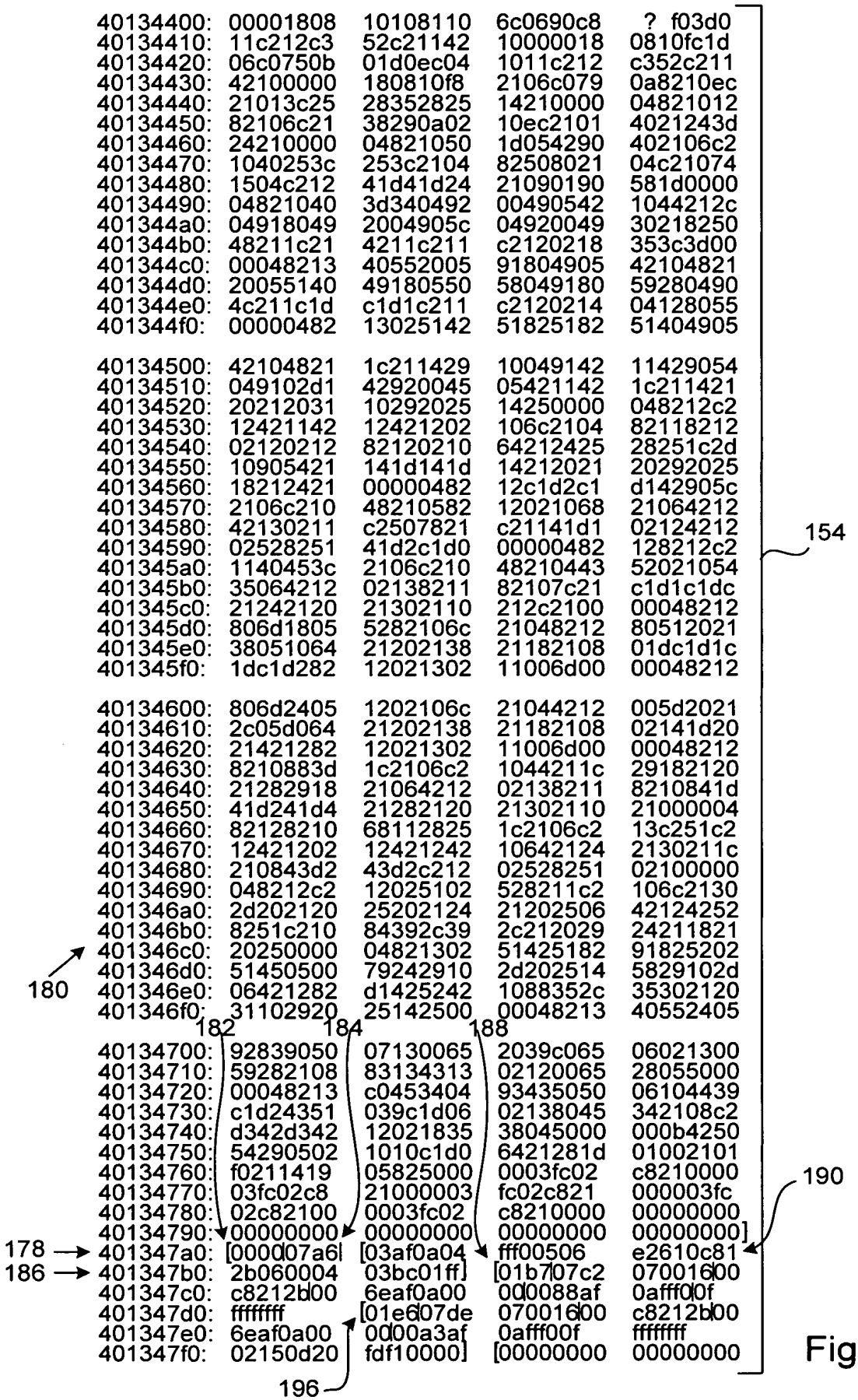
40134400: 00001808 10108110 6c0690c8 ? f03d0
40134410: 11c212c3 52c21142 10000018 0810fc1d
40134420: 06c0750b 01d0ec04 1011c212 c352c211
40134430: 42100000 180810f8 2106c079 0a8210ec
40134440: 21013c25 28352825 14210000 04821012
40134450: 82106c21 38290a02 10ec2101 4021243d
40134460: 24210000 04821050 1d054290 402106c2
40134470: 1040253c 253c2104 82508021 04c21074
40134480: 1504c212 41d41d24 21090190 581d0000
40134490: 04821040 3d340492 00490542 1044212c
401344a0: 04918049 2004905c 04920049 30218250
401344b0: 48211c21 4211c211 c2120218 353c3d00
401344c0: 00048213 40552005 91804905 42104821
401344d0: 20055140 49180550 58049180 59280490
401344e0: 4c211c1d c1d1c211 c2120214 04128055
401344f0: 00000482 13025142 51825182 51404905
40134500: 42104821 1c211429 10049142 11429054
40134510: 049102d1 42920045 05421142 1c211421
40134520: 20212031 10292025 14250000 048212c2
40134530: 12421142 12421202 106c2104 82118212
40134540: 02120212 82120210 64212425 28251c2d
40134550: 10905421 141d141d 14212021 20292025
40134560: 18212421 00000482 12c1d2c1 d142905c
40134570: 2106c210 48210582 12021068 21064212
40134580: 42130211 c2507821 c21141d1 02124212
40134590: 02528251 41d2c1d0 00000482 128212c2
401345a0: 1140453c 2106c210 48210443 52021054
401345b0: 35064212 02138211 82107c21 c1d1c1dc
401345c0: 21242120 21302110 212c2100 00048212
401345d0: 806d1805 5282106c 21048212 80512021
401345e0: 38051064 21202138 21182108 01dc1d1c
401345f0: 1dc1d282 12021302 11006d00 00048212
40134600: 806d2405 1202106c 21044212 005d2021
40134610: 2c05d064 21202138 21182108 02141d20
40134620: 21421282 12021302 11006d00 00048212
40134630: 8210883d 1c2106c2 1044211c 29182120
40134640: 21282918 21064212 02138211 8210841d
40134650: 41d241d4 21282120 21302110 21000004
40134660: 82128210 68112825 1c2106c2 13c251c2
40134670: 12421202 12421242 10642124 2130211c
40134680: 210843d2 43d2c212 02528251 02100000
40134690: 048212c2 12025102 528211c2 106c2130
401346a0: 2d202120 25202124 21202506 42124252
401346b0: 8251c210 84392c39 2c212029 24211821
401346c0: 20250000 04821302 51425182 91825202
401346d0: 51450500 79242910 2d202514 5829102d
401346e0: 06421282 d1425242 1088352c 35302120
401346f0: 31102920 25142500 00048213 40552405
40134700: 92839050 07130065 2039c065 06021300
40134710: 59282108 83134313 02120065 28055000
40134720: 00048213 c0453404 93435050 06104439
40134730: c1d24351 039c1d06 02138045 342108c2
40134740: d342d342 12021835 38045000 000b4250
40134750: 54290502 1010c1d0 6421281d 01002101
40134760: f0211419 05825000 0003fc02 c8210000
40134770: 03fc02c8 21000003 fc02c821 000003fc
40134780: 02c82100 0003fc02 c8210000 00000000
40134790: 00000000 00000000 00000000 00000000]
401347a0: [0000 07a6 [03af 0a04 fff0 0506 e261 0c81
401347b0: 2b06 0004 03bc 01ff] [01b7 07c2 0700 1600
401347c0: c821 2b00 6eaf 0a00 0000 88af 0aff f0f0
401347d0: ffff ffff [01e6 07de 0700 1600 c821 2b00
401347e0: 6eaf 0a00 0000 a3af 0aff f00f ffff ffff
401347f0: 0215 0d20 fdf1 0000] [0000 0000 0000 0000
180
182
184
188
154
190
178
186
196

Fig. 7B

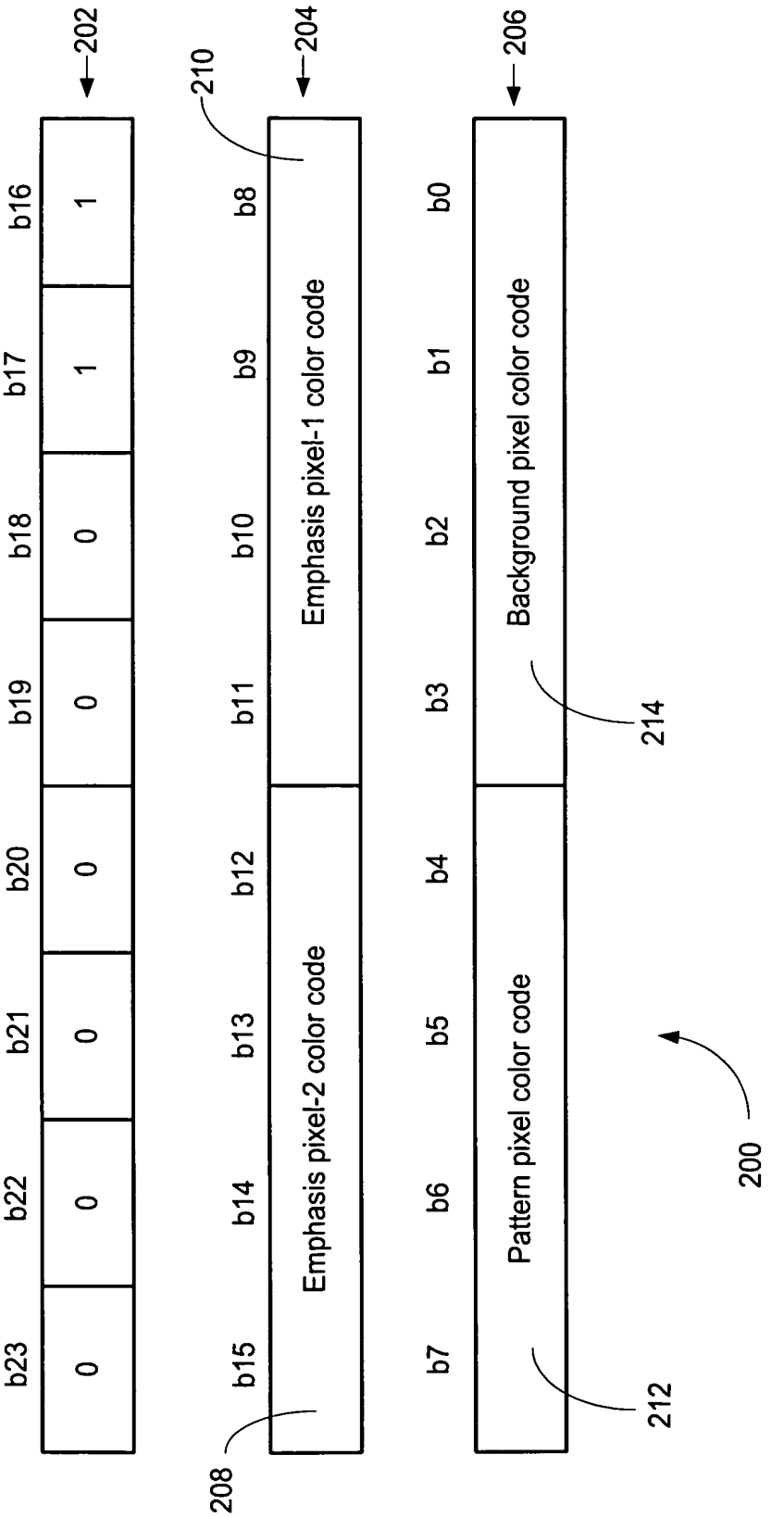
202
204
206
210
b23
b22
b21
b20
b19
b18
b17
b16
0
0
0
0
0
0
1
1
b15
b14
b13
b12
b11
b10
b9
b8
Emphasis pixel-2 color code
Emphasis pixel-1 color code
b7
b6
b5
b4
b3
b2
b1
b0
Pattern pixel color code
Background pixel color code
208
212
214
200

Fig. 8

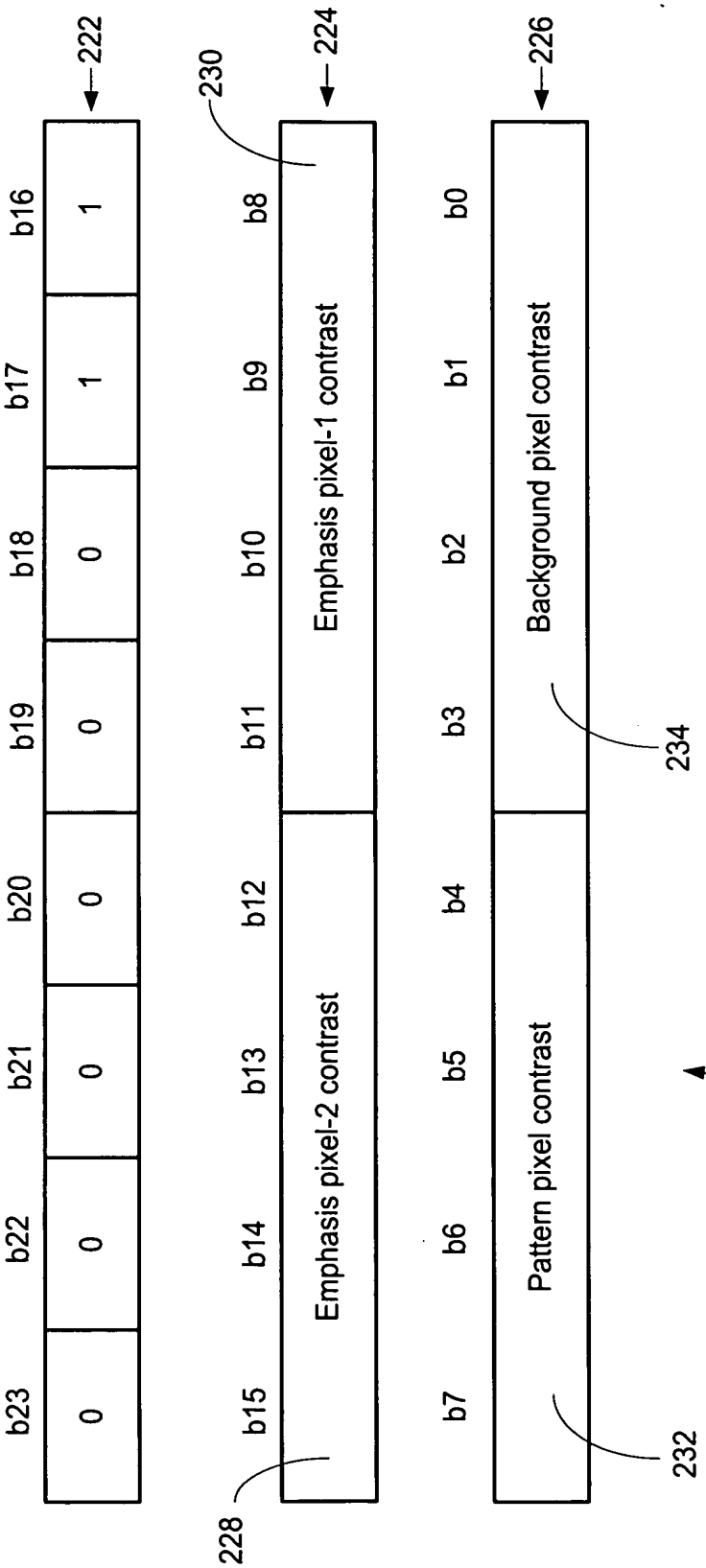
222
224
226
230
b23
b22
b21
b20
b19
b18
b17
b16
b15
b14
b13
b12
b11
b10
b9
b8
b7
b6
b5
b4
b3
b2
b1
b0
0
0
0
0
0
1
1
1
Emphasis pixel-2 contrast
Emphasis pixel-1 contrast
Pattern pixel contrast
Background pixel contrast
228
232
234
220

Fig. 9

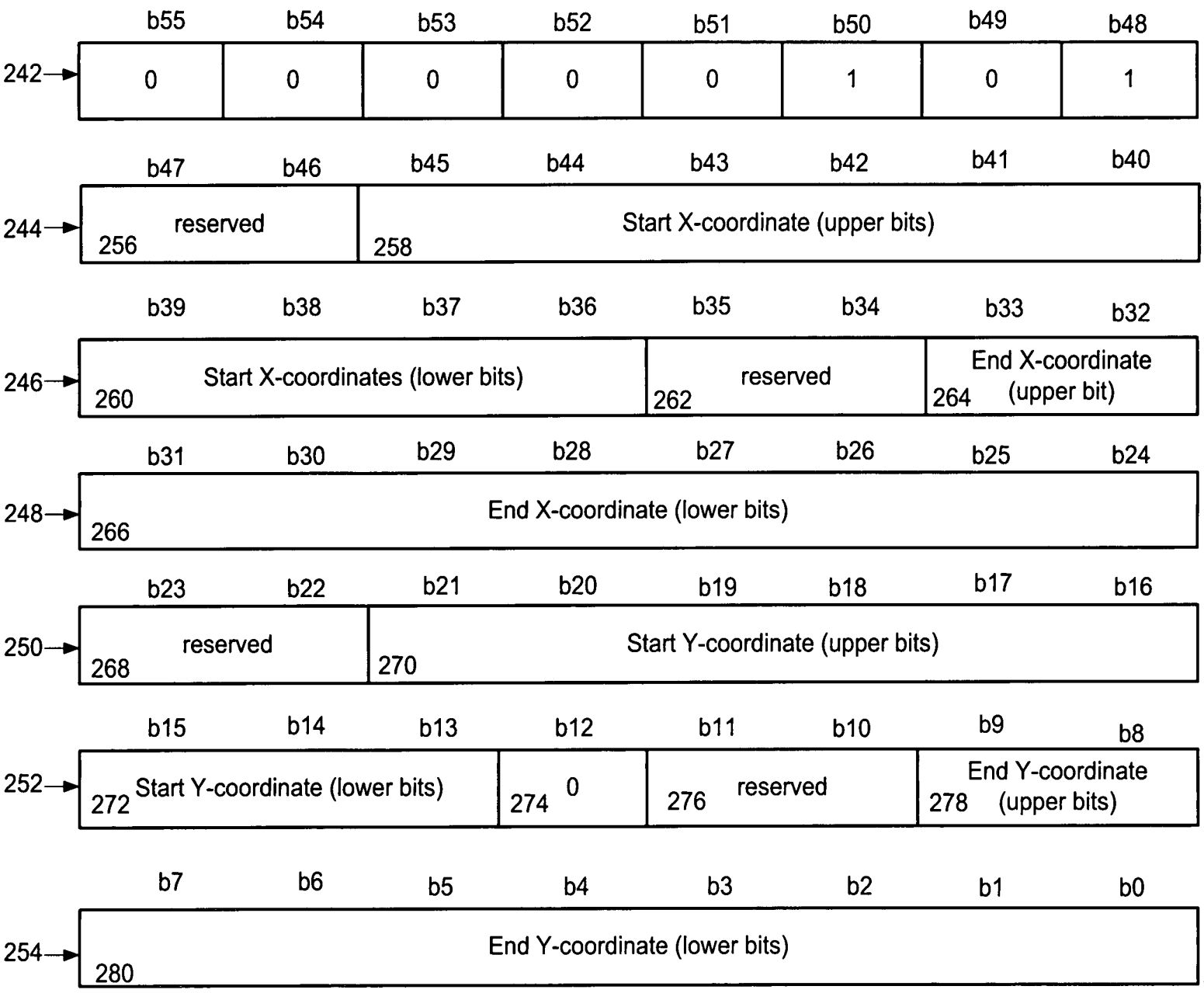

Fig. 10

REPLACEMENT SHEET

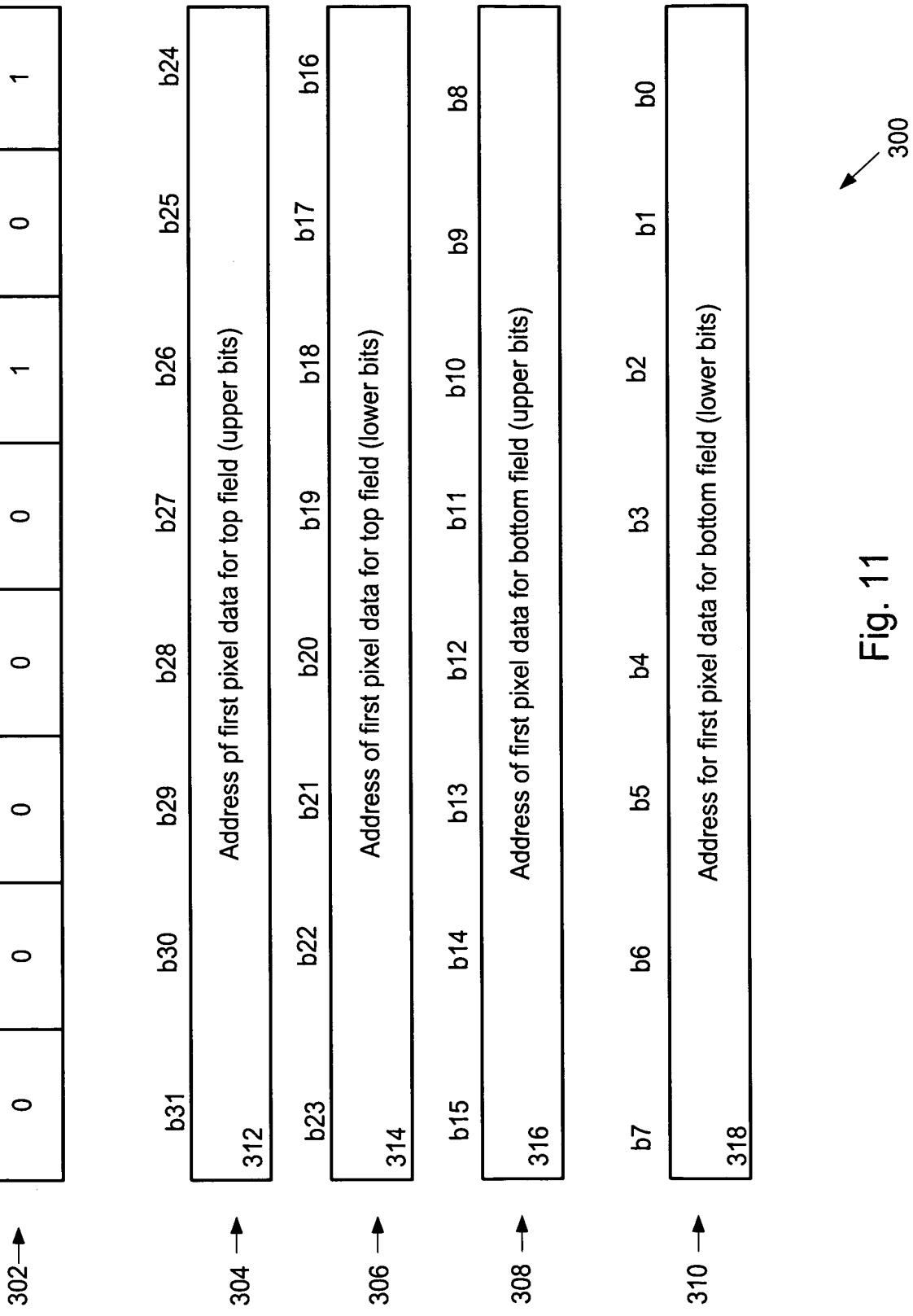
b39
b38
b37
b36
b35
b34
b33
b32
0
0
0
0
0
1
0
1
302
b31
b30
b29
b28
b27
b26
b25
b24
Address pf first pixel data for top field (upper bits)
312
304
b23
b22
b21
b20
b19
b18
b17
b16
Address of first pixel data for top field (lower bits)
314
306
b15
b14
b13
b12
b11
b10
b9
b8
Address of first pixel data for bottom field (upper bits)
316
308
b7
b6
b5
b4
b3
b2
b1
b0
Address for first pixel data for bottom field (lower bits)
318
310
300

Fig. 11

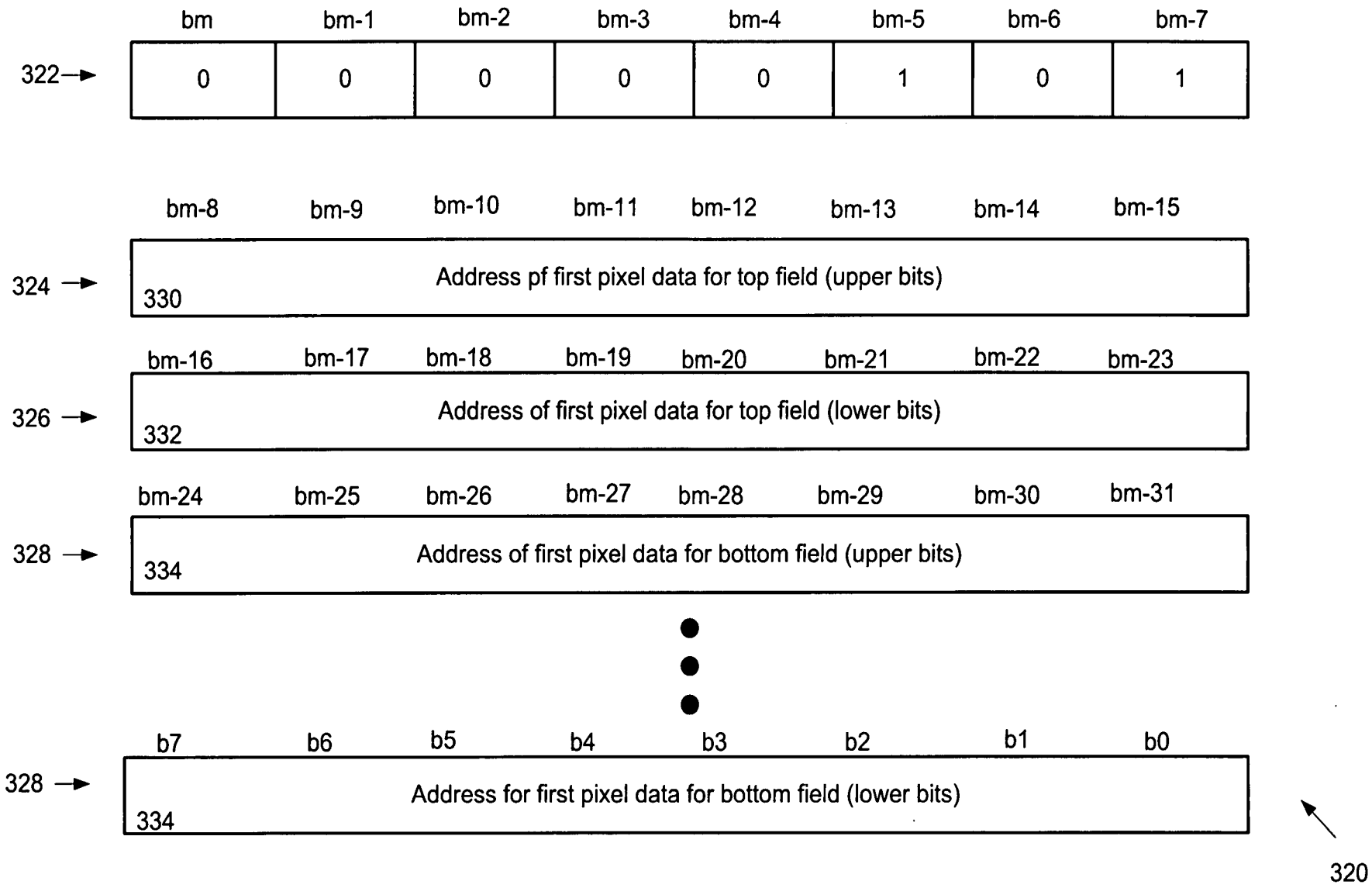

Fig. 12

REPLACEMENT SHEET

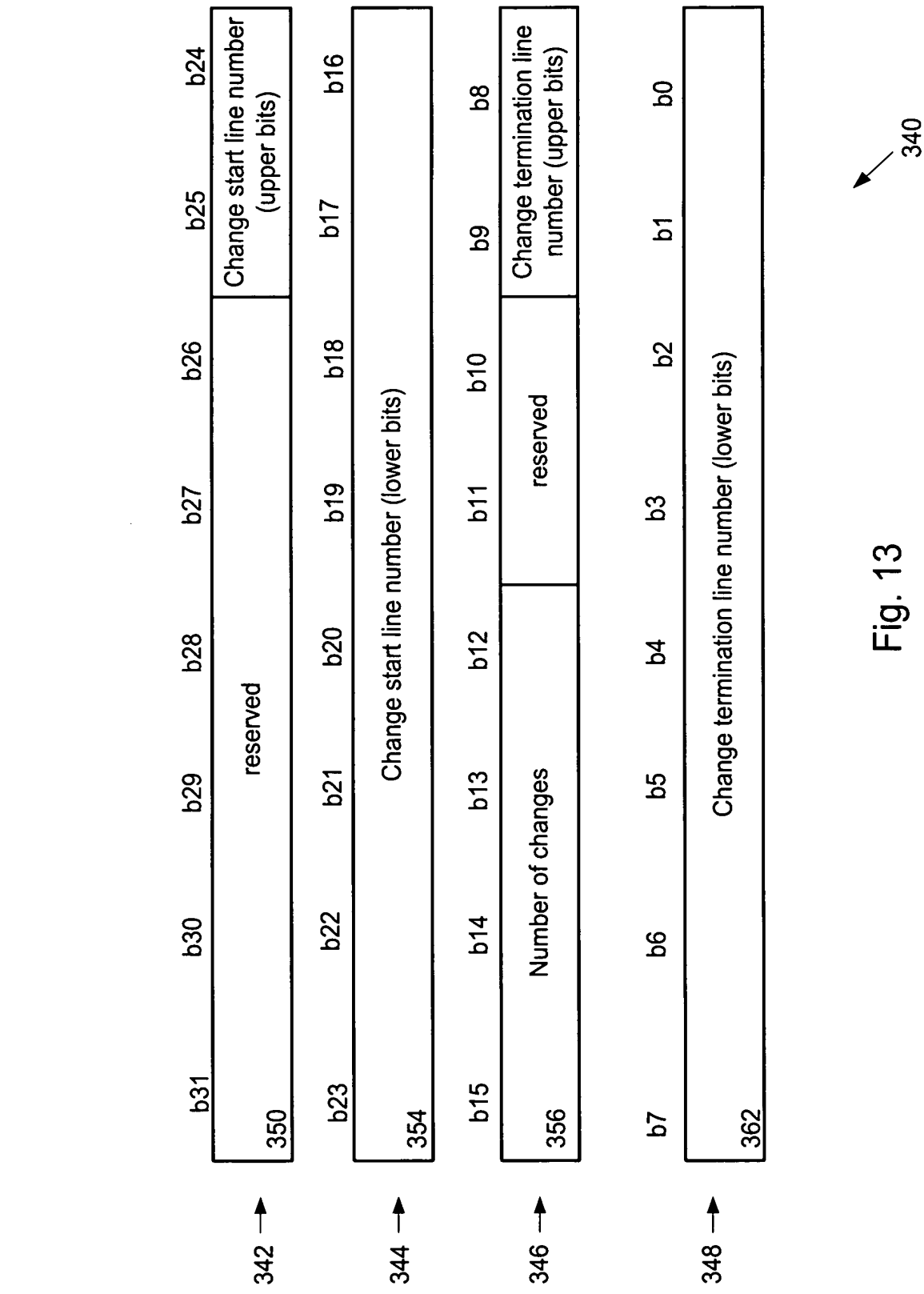
340
342
344
346
348
b31
b30
b29
b28
b27
b26
b25
b24
reserved
Change start line number (upper bits)
350
b23
b22
b21
b20
b19
b18
b17
b16
Change start line number (lower bits)
354
b15
b14
b13
b12
b11
b10
b9
b8
Number of changes
reserved
Change termination line number (upper bits)
356
b7
b6
b5
b4
b3
b2
b1
b0
Change termination line number (lower bits)
362

Fig. 13

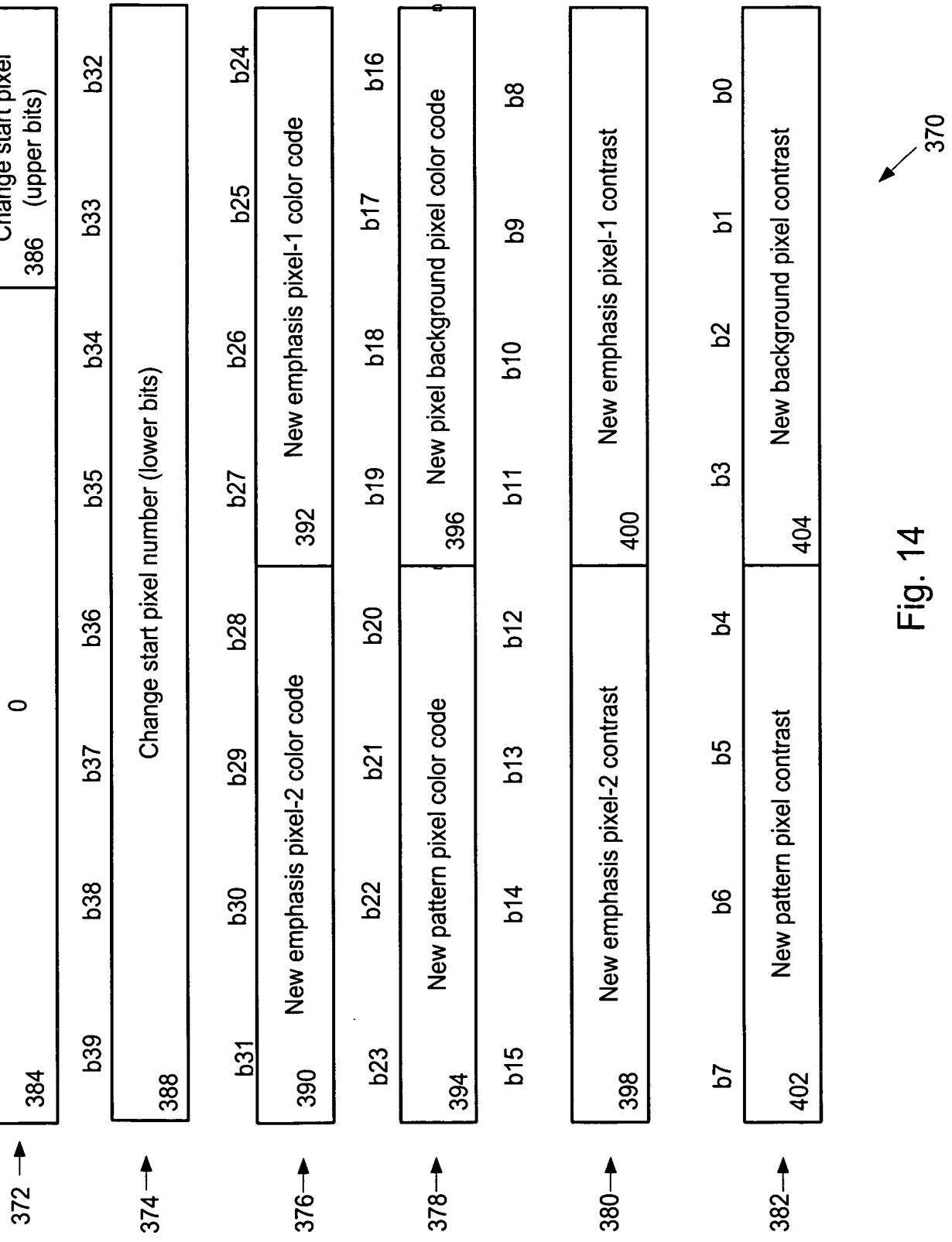
b47 b46 b45 b44 b43 b42 b41 b40
384
0
386
Change start pixel (upper bits)
372
b39 b38 b37 b36 b35 b34 b33 b32
388
Change start pixel number (lower bits)
374
b31 b30 b29 b28 b27 b26 b25 b24
390
New emphasis pixel-2 color code
392
New emphasis pixel-1 color code
376
b23 b22 b21 b20 b19 b18 b17 b16
394
New pattern pixel color code
396
New pixel background pixel color code
378
b15 b14 b13 b12 b11 b10 b9 b8
398
New emphasis pixel-2 contrast
400
New emphasis pixel-1 contrast
380
b7 b6 b5 b4 b3 b2 b1 b0
402
New pattern pixel contrast
404
New background pixel contrast
382
370

Fig. 14